UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

OFFICE OF
CHEMICAL SAFETY AND
POLLUTION PREVENTION

MEMORANDUM:

From: Kevin Sweeney, Senior Entomologist

Date: December 13, 2011

Subject: PRODUCT PERFORMANCE DATA EVALUATION RECORD

DP barcode: 388880
Decision no.: 447044
Submission no: 892791
Action code: 350
Product Name: SumiOne Technical Grade
EPA Reg. No or File Symbol: 10308-30
Formulation Type: Formulating use – technical grade active ingredient (TGAI)
Ingredients statement from the label with PC codes included: 96.65% metofluthrin (PC code 109709)
Application rate(s) of product and each active ingredient: N/A
OCSPP Guideline: 810.3400/3500

I. **Action Requested:** Review efficacy study submitted by Sumitomo that addresses the equivalency of the original technical grade metofluthrin to the proposed technical grade metofluthrin where the Z and trans isomer ratios have been changed from their original composition.

II. **Background:** The registrant submitted product chemistry, toxicology, and efficacy studies to support the equivalency of the formulations. Specification comparisons between S-1264 (original technical – 95.9% metofluthrin) and S-1264Z (96.65% metofluthrin) were presented for active ingredient purity and the 1R-, trans, and Z-isomers. The formulations were determined to be equivalent based on product chemistry and toxicology data evaluations although there were deficiencies in some of those studies.

III. **Efficacy Data Evaluation**

a. The data were not collected in accordance with GLP.

b. The primary review of the submitted data is attached. A summary of the findings and recommendation is presented below.

c. **MRID48431214 Todd, R.G. 2009. Comparison of Efficacy of SumiOne-Z (S-1264-Z) with SumiOne (S-1264). Environmental health laboratory, Sumitomo Chemical Company, Ltd. Osaka, Japan**

i. **Materials and Methods**:

1. Comparative studies were presented from Japan. Tables of raw data were included per EPA's request. Untreated control data were not presented.
2. The house fly, *Musca domestica,* and the mosquitoes, *Culex pipiens pallens,* and *Cx. quinquefasciatus* were the tested species. Adult females of these species were used in testing. The house fly is cosmopolitan in its distribution. On the other hand, *Cx. pipiens pallens* is a member of the *Cx. pipiens* complex, which resides primarily in temperate regions of Asia, especially China, Japan and

Korea. *Culex quinquefasciatus* is widely distributed in temperate and tropical climates.

3. In the United States, end-use metofluthrin products are applied through vaporization of the active ingredient to repel and knockdown mosquitoes. The data presented in this study included topical applications to the mosquito and house fly together with vapor exposures via impregnated paper strips, liquid vaporizers, fans, or coils to free flying mosquitoes only.

ii. Results:

1. The topical application results showed that the LD_{50} of each formulation was nearly equivalent for the house fly and the *Culex pipiens pallens* mosquito.
2. LT_{50} and KT_{50} values were reported for the vaporization studies *with Cx. pipiens pallens* as follows:
   a. The LT_{50} values of both formulations that were derived from the liquid vaporizer application were nearly equal at 9.1 and 9.2 minutes, respectively. KT values differed by 0.4 minutes with the S-1264-Z formulation having greater knockdown activity.
   b. The LT_{50} values for the paper strips and fan applications resulted in values that differed by almost one minute - with the 1264-Z formulation having greater insecticidal activity. KT values showed the same trend.
   c. For the mosquito coil applications (0.005% and 0.0075% metofluthrin w/w) the 0.005% the 1264-Z formulation had significantly greater knockdown and insecticidal activity when compared to S-1264. In comparison, the 0.0075% applications were nearly equivalent with the S-1264 formulation showing slightly higher activity for KT.
3. *Culex quinquefasciatus* mosquitoes were exposed for up to 90 minutes in a chamber to burning mosquito coils with the subject formulations. Exposures to coils with 0.005% and 0.0075% metofluthrin w/w were similar to those for the *Cx. pipiens pallens* testing. The S-1264-Z formulation was more active at the lower metofluthrin concentration but nearly equivalent at the high concentration to the S-1264 formulation.

IV. ENTMOLOGIST'S RECOMMENDATIONS:

a. The submitted data shows that S-1264-Z and 1264 are equivalent with the former having slightly higher insecticidal activity.
b. Only insecticidal activity data were provided. No data were submitted for repellency evaluation *per se* but KT data were provided to better characterize spatial activity.